

Customer No. 020991

REMARKS

I. Introduction

In response to the Office Action dated October 29, 2004, please amend claims 8 and 10, and consider the following remarks. Claims 1-13 remain in the application. Re-examination and re-consideration of the application, as amended, is requested.

II. The Cited References and the Subject Invention

A. The Voit Reference

U.S. Patent No. 6,798,751, issued September 28, 2004 to Voit et al. discloses customer premises equipment for vertical services integration. To deliver high-quality vertical services the underlying ADSL Data Network (ADN) needs to establish Quality of Service (QoS) as a core characteristic and offer an efficient mechanism for insertion of the vertical services. The disclosed network architecture introduces QoS into the ADN. The architecture utilizes a switch capable of examining and selectively forwarding packets or frames based on higher layer information in the protocol stack, that is to say on information that is encapsulated in the layer-2 information utilized to define normal connectivity through the network. The switch enables segregation of upstream traffic by type and downstream aggregation of Internet traffic together with traffic from a local vertical services domain. Customer Premises Equipment (CPE) located between the ADN and customer premises data equipment examines frames received from the data equipment and modifies the frames according to the destination of the frames' payloads. This CPE also enforces QoS guarantees in the upstream direction and security-related access control lists.

III. Office Action Prior Art Rejections

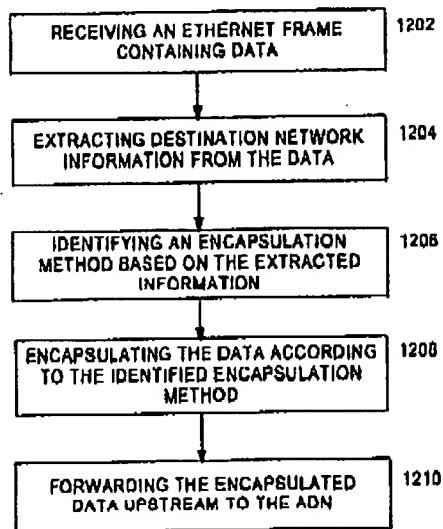
In paragraph (1)-(2), the Office Action rejected claims 1-13 under 35 U.S.C. § 102(e) as being anticipated by Voit et al., U.S. Patent No. 6,798,751 (Voit). Applicants respectfully traverse this rejection.

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With Respect to Claims 1 and 13: Claim 1 recites:

*A computer implemented method for provisioning broadband service in a Point-to-Point Protocol over Ethernet (PPPoE) network, comprising:  
transmitting an authentication request from a modem to a single configuration domain name over a PPPoE network; and  
receiving authorization from said configuration domain name.*

According to the Office Action, the step of transmitting an authentication request from a modem to a single configuration name over a PPPoE network is disclosed as follows:



55 cartridge, as well as media bearing the software in a scan-  
nable format. A carrier wave type of medium is any type of  
signal that may carry digital information representative of  
the instructions or code for performing the sequence of  
steps. Such a carrier wave may be received via a wireline or  
60 fiber-optic network, via a modem, or as a radio-frequency or  
infrared signal, or any other type of signal which a computer  
or the like may receive and decode.

And the step of receiving authorization from the configuration domain name is disclosed as follows:

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Another objective of the invention relates to improvement 55 of the cost effectiveness of the data network, for example, by reducing the demand for high-capacity interoffice links while increasing the bandwidth available at the network edge for at least some types of services.

A related objective is to provide a technique for introduc- 60 tion of new high-end services near the network edge, from a domain that is more secure and therefore less subject to hacker attacks.

A further objective of the invention is to support QoS and/or local introduction of virtual services, without the as need to assign multiple virtual circuits or the like to each subscriber.

Still further objectives of the invention relate to provi- sioning of service through an access data network. Specifically, it is an objective of the provisioning related concepts to significantly reduce, or completely remove, the errors present in the existing data circuit provisioning process, which includes: manual ordering processes; manual record-keeping; and manual circuit changes at the PSTN frame and the intermediate ADSL frame.

A further objective of the invention is to support customer 10 premises data equipment that have conventional protocol stacks without the need for additional or proprietary shim software in each user device.

A related objective is to support a plurality of different customer premises data equipment that each include a 15 network stack implementing a common communications protocol.

Another objective of the invention is to provide a single logical communications session which multiplexes multiple 20 actual sessions between a customer data equipment and other devices on a local access network or the Internet. A related objective is multiplexing multiple sessions from various customer premises data equipment over a single logical communications session.

25 A further objective of the invention is to alter data frames received from customer premises data equipment according to the destination network domain of the payload of that data frame and to forward the altered data frame to the ADN.

Another objective of the invention is to enforce access control lists that prevent certain sessions from being estab- 30 lished or used between particular customer premises data equipment and particular network destinations.

A further objective of the invention is to support QoS guarantees in the upstream traffic received from customer 35 premises data equipment and forwarded to the ADN.

The preferred embodiments of the invention alleviate many of the above noted problems by providing an inter- 40 mediate node, typically an enhanced switch, to segregate upstream traffic based on analysis of the type of communication. This analysis utilizes protocol information contained in each communication, for a protocol higher than the switching protocol, that is to say higher than a protocol used to define the customer's logical circuit. In an implementa- 45 tion utilizing ATM, for example, the logical circuit is a virtual circuit, and the node examines the protocol information for layers above the ATM layer. One type of traffic remains on the virtual circuit, whereas other traffic is handed off to a vertical services domain. The node also provides a point to aggregate traffic from the from the vertical services 50 domain with other traffic on the subscriber's logical circuit, for transport to the customer premises equipment.

To this end, the preferred embodiments use an ATM

The Applicants respectfully disagree. None of the foregoing teaches or suggests transmitting an authentication request to a single configuration domain name over a PPPoE network. As far as the Applicants can ascertain, the foregoing does not discuss the transmission of an authentication request or the reception of an authorization at all, let alone that the request is transmitted to a single configuration domain name and over a PPPoE network. Accordingly, the Applicants respectfully traverse this rejection.

Claim 13 recites features analogous to those of claim 1 and is patentable on the same basis.

With Respect to Claims 2-5: Claim 2 recites that a modem is provided that includes a configuration domain name associated with a configuration Broadband Service Node (BSN). According to the Office Action, this feature is disclosed as follows:

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First, the carrier operating the ADSL data network 10 and the vertical services domain network 13 will maintain a pool of local addresses for assignment, on an as-needed basis, to end user equipment 25. To the carrier, the available IP addresses are a limited resource. Accordingly, the carrier assigns IP addresses on a dynamic basis, only to those users actually on-line at any given time. The carrier preferably utilizes private network type IP addresses and dynamically administers such addresses using dynamic host configuration protocol (DHCP). DHCP is a protocol for automatic TCP/IP configuration, which enables dynamic address allocation and management.

But this refers only to dynamic addressing of IP addresses, a feature well known in the art. It does not disclose providing a modem having configuration domain name associated with a configuration BSN before performing the steps described in claim 1. Accordingly, the Applicants respectfully traverse the rejection of claim 2.

Claim 3 recites that a PPPoE session is established before transmitting the authentication request. While the Voit reference mentions PPPoE, it does not appear to be mentioned in terms obtaining authentication after a PPPoE session is established. The Applicants cannot ascertain where the Voit reference discloses this feature.

Claims 4 and 5 are likewise not disclosed in the Voit reference. The Office Action argues that these features are inherent in a PPPoE system, but inherency "may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient." *Continental Can Co. v. Monsanto Co.*, 948 F.2d 1264, 1269 (Fed. Cir. 1991). Instead, to establish inherency, the extrinsic evidence "must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill." *Continental Can Co.*, 948 F.2d at 1268.

As described in the Applicants' specification at page 4, lines 13-30, users must typically enter a user name/domain and a password in order to make a PPP connection. However, (1) the information is not transmitted to a single *configuration domain name*, (2) a generic password is not transmitted. By storing the *configuration domain name* in the modem and transmitting the authentication request to that single *configuration domain name*, the Applicants' invention relieves the user of the task of entering the domain name or password.

With Respect to Claims 6-7: Claim 6 recites that the step of receiving authorization comprises acquiring at least one temporary dynamic IP address. The Office Action does not

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indicate where this feature is disclosed. Without more explanation as to why this claim was rejected, the Applicants respectfully traverse. As far as the Applicants are aware, the Voit reference does not disclose acquiring a temporary IP address, using that address for a configuration request, and to receive full configuration details including a static IP address.

With Respect to Claims 8-12: Claim 8 recites:

*A system for provisioning broadband service in a Point-to-Point Protocol Over Ethernet (PPPoE) network, comprising:*  
*at least one client computer;*  
*a modem coupled to said client computer, said modem including a memory comprising:*  
*instructions for transmitting an authentication request from a modem to a single configuration domain name over a PPPoE network; and*  
*instructions for receiving authorization from said configuration domain name;*  
*a single configuration Broadband Service Node (BSN) coupled to said modem, where said single configuration domain name is associated with said single configuration BSN; and*  
*an authentication server coupled to said single configuration BSN.*

According to the Office Action, the Voit reference discloses a single configuration BSN associated with a single configuration domain name as follows:

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The switch 19 also includes an Ethernet interface 44, an ATM interface 45 and associated physical interface 46 facing toward the gateway router 29 and hence the ISPs 11. The physical interface 46 might take the form of one or more OC-12 or OC-48 links to the gateway router 29. These links carry all ATM cell traffic going to and from the ISPs or other wide area inter-networks 11. For these communications, the Ethernet interface 44 passes through PPPoE traffic, as specified by the Ethertype indicator in the cells transporting the relevant frame segments.

Facing the vertical services domain, the switch 19 includes an Ethernet interface 47 and a physical interface 48. These interfaces conform to the particular network utilized by the carrier for the vertical services domain, such as giga-bit Ethernet over wire or optical links.

The switch fabric 49 performs the physical switching of data along various paths through the switch 19, in response to instructions from a programmed routing controller 50. FIG. 4 also shows the communications flow through the switch, for each subscriber. The switch 19 also implements a Decision Point 51, shown for example within the Ethernet interface processing 41 on the subscriber facing side. At that point, the PPPoE traffic is separated from all other traffic. From that point, the PPPoE Flow 52 for each subscriber extends as a portion of the subscriber's ATM virtual circuit, facing the cell relay network and hence the ISPs 11. The PPPoE Flow 52 contains Ethernet frames that are of PPPoE Ethertype. Facing towards the subscriber premises, the switch 19 implements an Aggregate Flow path 53, in the form of another portion of the ATM virtual circuit, which contains all ingress/egress subscriber traffic. The switch implements a Generic Path 54 extending through the interfaces to the vertical services network. This path 54 carries all traffic other than PPPoE.

In this example, the switch 19 implements the Decision Point 51 based on recognition of the Ethertype indicator, which is above the layer-2 ATM cell routing information. However, the switch may implement the Decision Point 51 based on still higher-level protocol information. Also, those skilled in the art will recognize that the concepts of the present invention are applicable in networks using different protocol stacks, for example, based on native IP.

In a preferred embodiment, the Ethernet and ATM inter-

However, as described above with respect to claim 1, the Applicants cannot ascertain where the foregoing discloses a *single configuration Broadband Service Node (BSN)* as recited in claim 8. Accordingly, the Applicants respectfully traverse this rejection.

With Respect to Claim 10: Claim 10 recites multiple BSNs, each having a different domain name, and each coupled to said modem and an authentication server. According to the Office Action, this is disclosed in Voit as follows:

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5 For the leg of the subscriber's logical circuit, extending from the L3/4 ATM switch 19 through the gateway router 29, the carrier programs one or more nodes along the path behind the DSLAMs 17, to regulate traffic on the virtual circuit to the rate corresponding to the grade of Internet access service to which the particular customer subscribes. In the preferred embodiment, at least one such node performing this rate shaping function is the L3/4 ATM switch 19. All traffic going to and from the ISP network(s) 11 therefore is still limited to the rates defined in the service level agreement (SLA) for Internet access that the carrier has with the particular customer.

10 The portion of the virtual circuit extending between the ATM switch 19 and the ATU-R 23, however, is not rate limited but instead runs at the maximum rate that the line will support using the rate-adaptive ADSL modem operation. In most cases, the rate-adaptive ADSL modem operation will support rates substantially higher than the subscription rate for Internet access service.

15 The L3/4 ATM switch 19 also provides the interconnection to the subscriber's virtual circuit for insertion of downstream traffic from the vertical services domain 13 and separation of upstream traffic from the subscriber's virtual circuit going to the vertical services domain 13. In accord with the invention, decisions as to whether upstream traffic is destined for the vertical services domain 13 or should remain on the subscriber's virtual circuit going through the gateway router 29 and the cell relay network 30 to the ISPs 11 is based on an analysis of traffic type. The traffic type analysis relies on protocol information contained in the communications, which relates to layers of the protocol stack that are higher than the layer-2 switching protocol, in this case above the ATM layer.

20 As shown in FIG. 2, traffic destined for an ISP 11 utilizes a variation of a point to point protocol (PPP) intended to run on top of Ethernet, referred to as PPP over Ethernet or "PPPoE." A 'type' indicator contained within the Ethernet frames identifies the PPPoE protocol. In contrast, traffic going to and from the vertical services domain utilizes other 'types' of Ethernet protocol. All traffic to and from the customer premises uses Ethernet frames carried within ATM cells.

25 The switch 19 therefore routes a subscriber's traffic going to and from an ISP 11, upon detection of the PPPoE indicator in the level 3 data contained within the Ethernet cells. This traffic will also utilize public IP addressing. In contrast, the ATM switch 19 routes a subscriber's traffic going to and from the vertical services domain, upon detection of any other type of Ethernet protocol at level 3 or above in the protocol stack. The IP addressing in the vertical services domain 13 utilizes private-IP addresses, for example, as administered with a DHCP server (not shown) coupled to the network cloud 33. Although shown separately, the cloud 33 may be implemented as a portion of the network providing the physical elements of the vertical services domain. The portion 33, however, would typically be a logically separate domain that the carrier controls and restricts for its own network administration use.

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While the foregoing discloses traffic transmitted by a PPPoE network, the Applicants do not understand where the multiple BSNs recited in claim 10 are taught by the foregoing passage. Without further explanation, the Applicants respectfully traverse the rejection of claim 10.

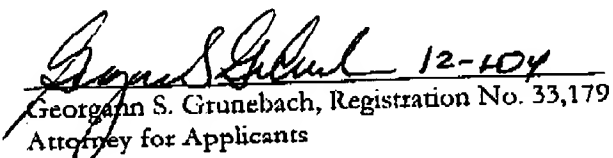
IV. Dependent Claims

Dependent claims 2-7 and 9-12 incorporate the limitations of their related independent claims, and are therefore patentable on this basis. In addition, these claims recite novel elements even more remote from the cited references. Accordingly, the Applicants respectfully request that these claims be allowed as well.

V. Conclusion

In view of the above, it is submitted that this application is now in good order for allowance and such allowance is respectfully solicited. Should the Examiner believe minor matters still remain that can be resolved in a telephone interview, the Examiner is urged to call Applicants' undersigned attorney.

Respectfully submitted,

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